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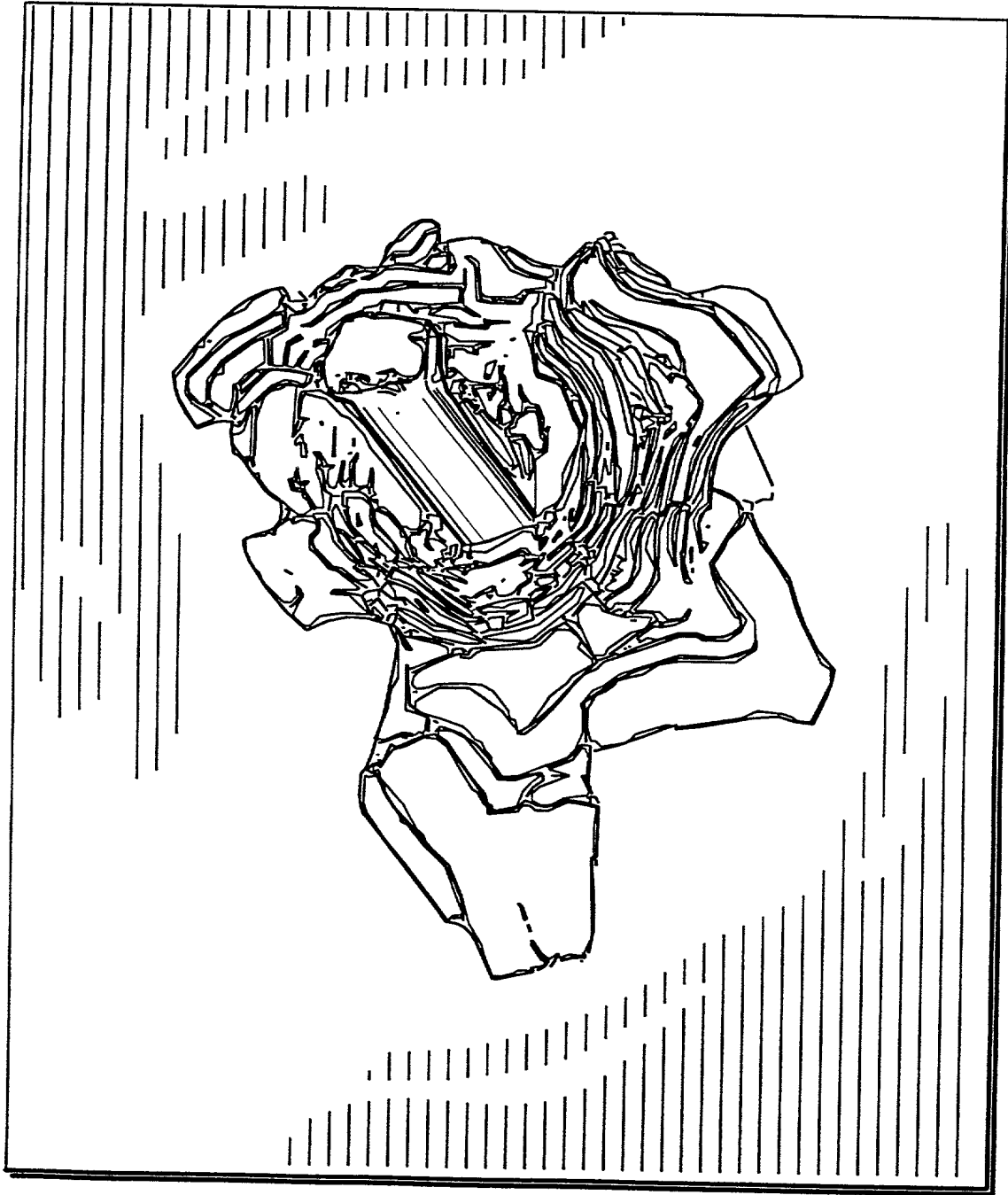


FIG. 1

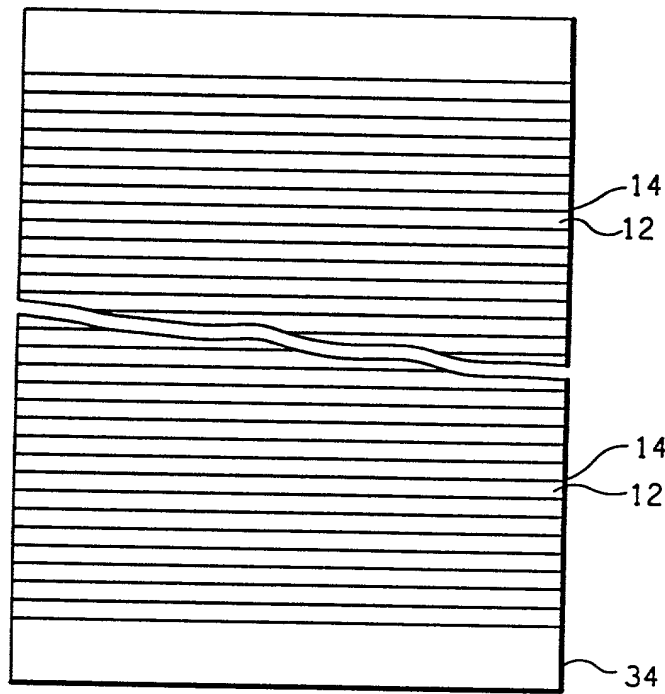


FIG. 2

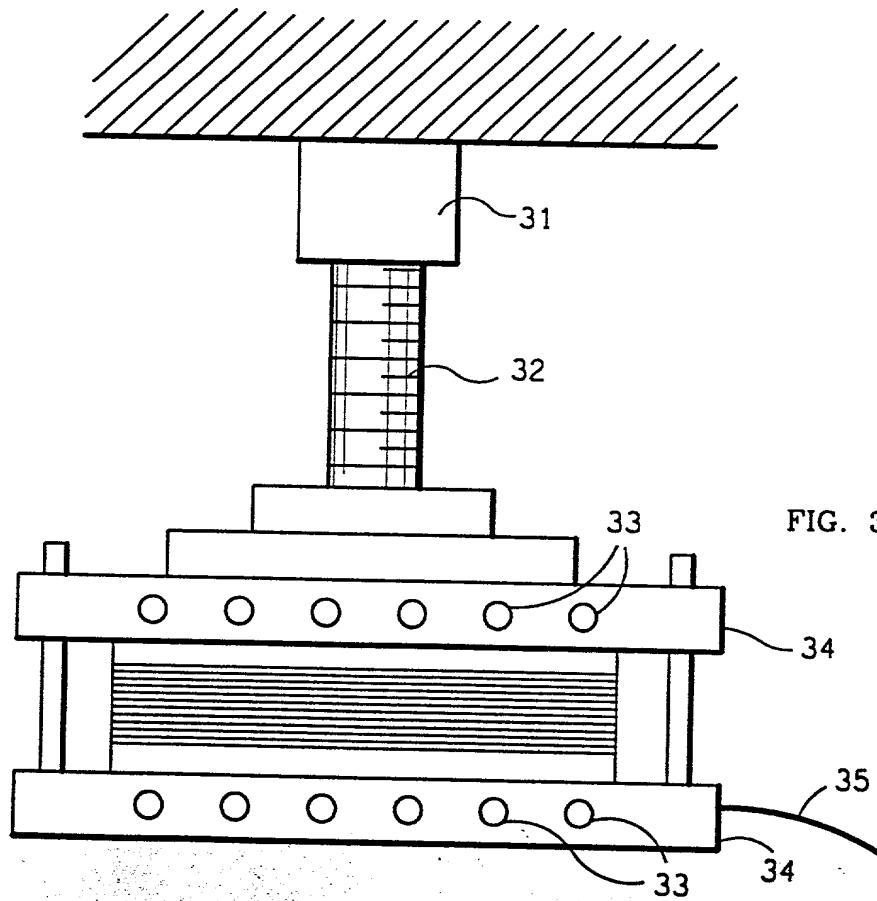


FIG. 3

FIG. 4

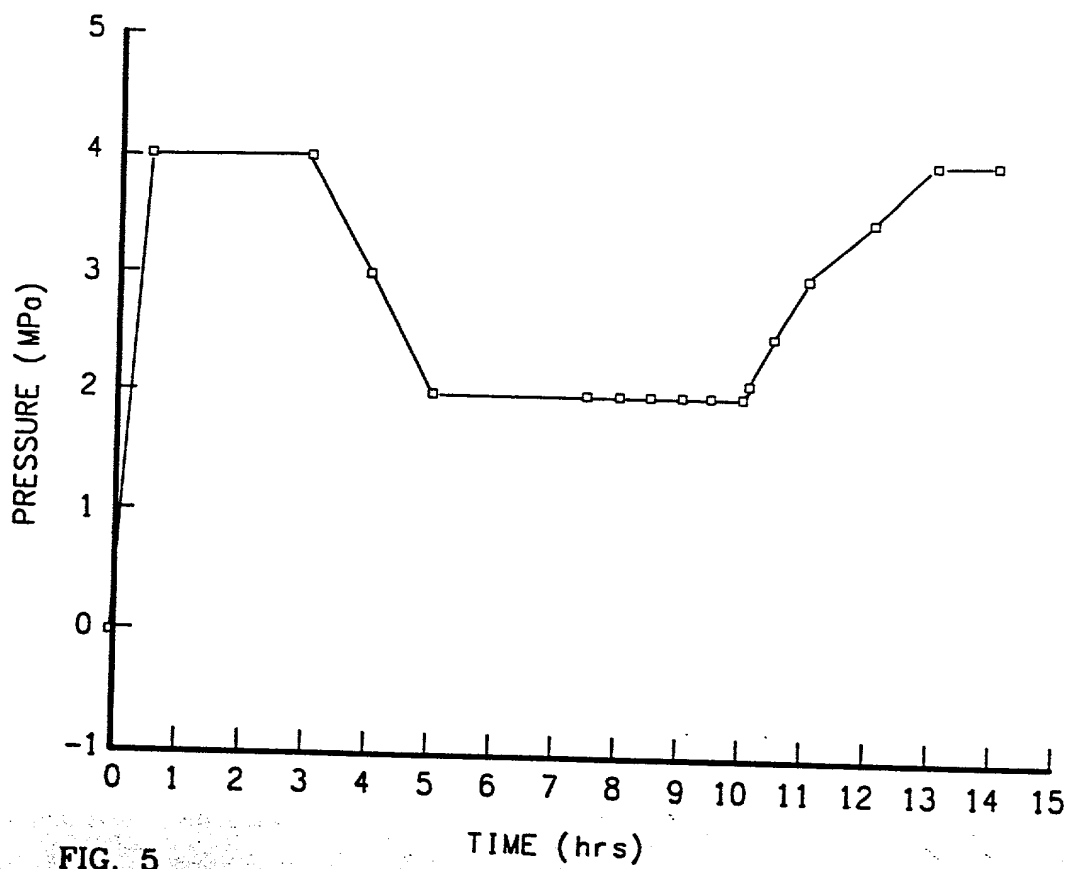
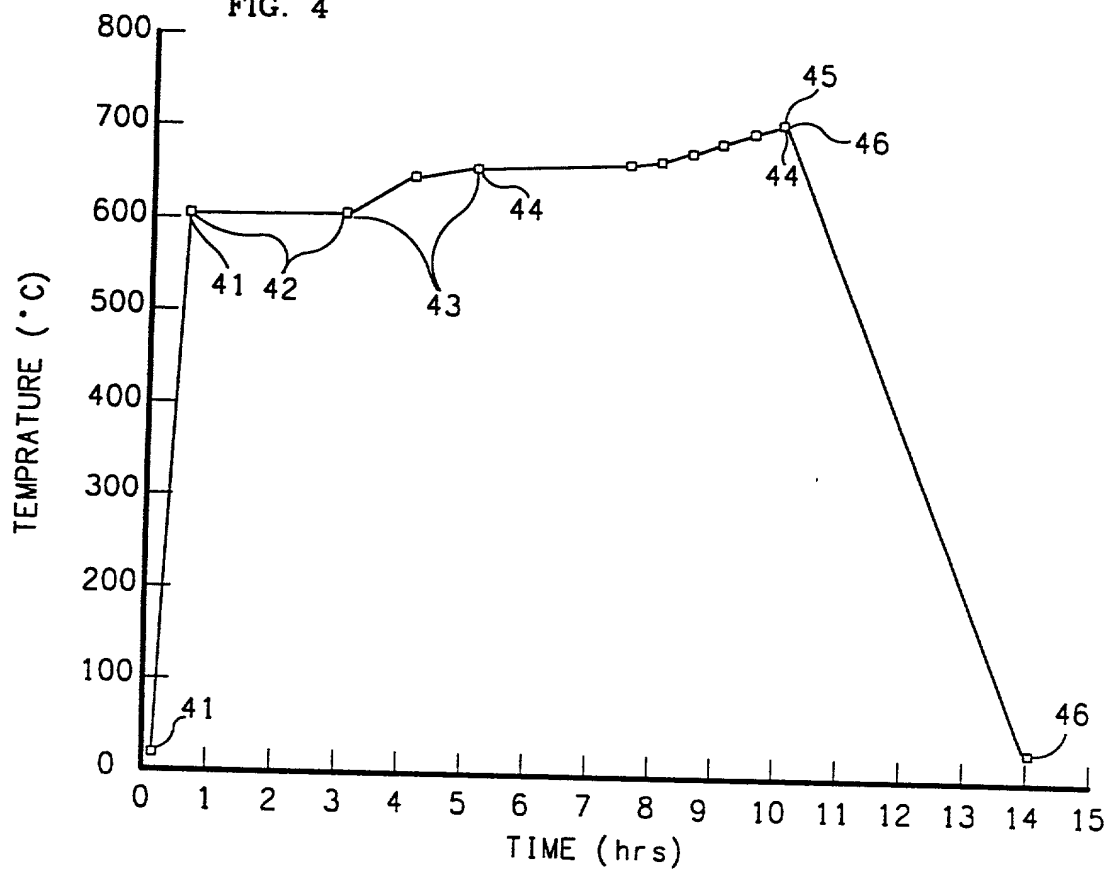


FIG. 5

Table 1. Typical values of plane strain fracture toughness, K_{IC} , at room temperature (for illustration purposes only)

MATERIALS					
Steels	E (GPa)	σ_y (MPa)	K_{IC} (MPa)	r_{IC} (mm)	L (mm)
Medium carbon (AISI-1045)	210	269	50	55	88.0
Pressure Vessel (ASTM-A5330-B)	210	483	153	16.0	256.0
High Strength Alloy (AISI-4340)	210	1,593	75	0.4	6.4
Maraging Steel (250-Grade)	210	1,786	74	0.3	4.8
Aluminum Alloys					
2024-T4	72	330	34	1.7	27.2
7075-T651	72	503	27	0.5	8.0
7039-T651	72	338	32	1.4	22.4
Titanium Alloys					
Ti-6Al-4V	108	1,020	50	0.4	6.4
Ti-4Al-4Mo-2Sn-05 Si	108	945	72	0.9	14.4
Ti-6Al-2Sn-4Zr-6Mo	108	1,150	23	0.1	1.6
Polymers					
PS	3.25		0.6 - 2.3		
PMMA	3 - 4		1.2 - 1.7		
PC	2.35		2.5 - 3.8		
PVC	2.5 - 3		1.9 - 2.5		
PETP	3		3.8 - 6.1		
Ceramics					
Si ₃ N ₄					
SiC	410		43-45		
Al ₂ O ₃					
Soda-Lime Glass	360		30-35		
WC - 15 wt% Co (cermet)	570		16 - 18		
Electrical Porcelain	-		1		

Figure 6
PRIOR ART

TABLE 2

KNOOP MICROHARDNESS DATA FOR
NICKEL AND NICKEL INTERMETALLIC PHASES FOR HOT-PRESSED NI-AL DISKS
AND
TITANIUM AND TITANIUM INTERMETALLIC PHASES FOR HOT-PRESSED TI-AL DISKS
(25 g load)

Phase	H_{H25} (kg/mm ²)
Ni	135
Ni (Al)	170
Ni ₃ Al	424
NiAl	450
Ti	150
Ti (Al)	300
Ti ₃ Al	420
TiAl	590
TiAl ₃	700

Figure 7
PRIOR ART

FIG. 8a

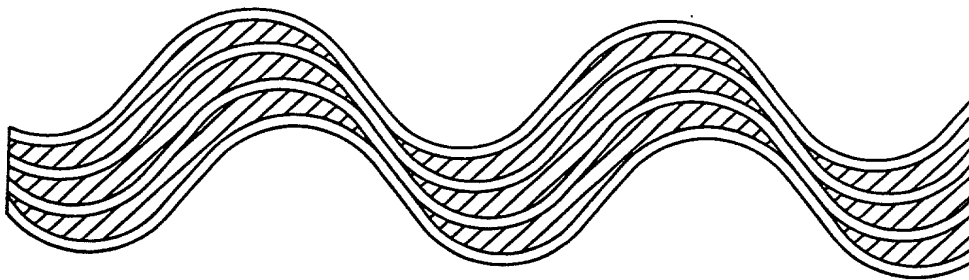
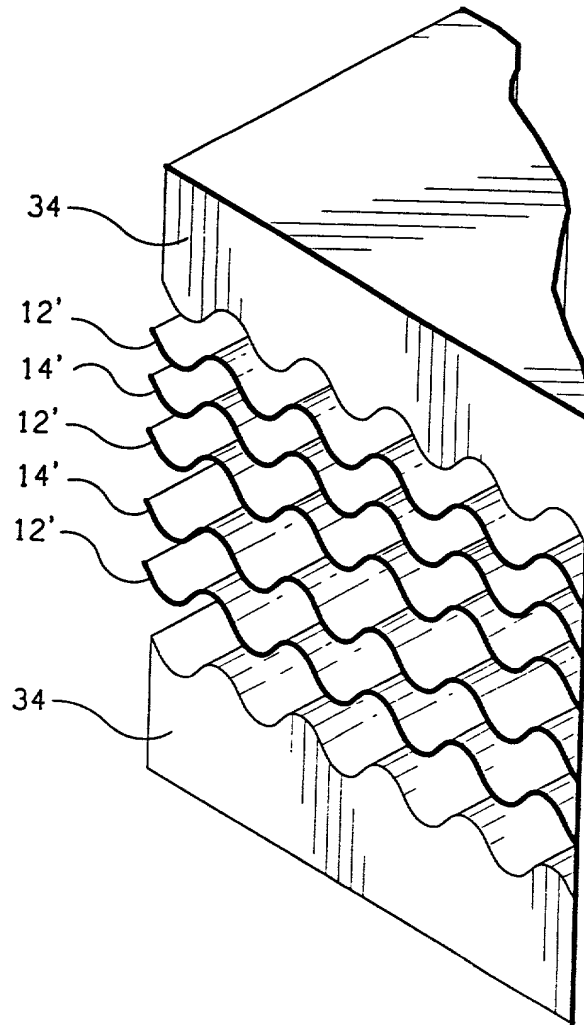


FIG. 8b